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Computer Modeling to Identify New Medications for Nicotine Addiction Wins First Place NIDA Addiction Science Award at 2010 Intel ISEF

Brain Training and Class Cutting Also Award-Winning Topics

A project using cutting edge computer modeling to identify potential new medications for nicotine addiction won first place distinction at the annual Addiction Science Awards at this year's Intel International Science and Engineering Fair (ISEF) --- the world's largest science competition for high school students. The Intel ISEF Addiction Science Awards were presented at an awards ceremony last night in San Jose, Calif., by the National Institute on Drug Abuse (NIDA), part of the National Institutes of Health, and Friends of NIDA, a coalition that supports NIDA's mission.

First place distinction for the special Addiction Science Awards went to Ameya Ashish Deshmukh, a 16-year-old junior at Upper Arlington High School in Upper Arlington, Ohio. His winning project was titled “Rational Drug Design Methods for the Identification of a Novel Negative Allosteric Modulator of a4b2 Nicotinic Receptors.” Because identifying a molecule that will effectively bind to nicotine receptors can be like finding a needle in a haystack, Mr. Deshmukh used what is known as rational drug design. He first selected candidate molecules based on previous research. He then used computerized molecular models to narrow the list of potential compounds. Finally, he tested these on human cells to identify which compounds show promise for treating nicotine addiction.

"Our first place winner realized the potential of rational drug design to address the need for more effective medications for treating nicotine addiction,” said NIDA

Director Dr. Nora Volkow. "The result of this project, if developed further, has the potential to dramatically improve our smoking cessation strategies."

Second place distinction in the Addiction Science Awards went to "Improving ADHD Treatment: A Comparison of Stimulant Medication Treatment for Children with ADHD, Computerized Cognitive Training of Attention and Working Memory, and the Combination of the Two." Seventeen-year-old Kevin Michael Knight, a junior at Collegiate High School at Northwest Florida State College in Niceville, Fla. submitted the entry. As a student diagnosed with ADHD who had difficulties with the side effects of stimulant medication, Knight wanted to identify other ways to treat the attention and memory problems ADHD causes. He asked whether it is possible to use specialized computer programs to re-train the brains of students with ADHD, either as an alternative or as a complement to the stimulant medications typically prescribed to treat ADHD. The results of his pilot study suggest that some cognitive games could be useful as an adjunct to currently available ADHD medication.

Third place went to Joseph Hunter Yagoda, a 17-year-old student at the William A. Shine Great Neck High School in Great Neck, N.Y. for his analysis of the thought process that goes into a teenager's decision to cut classes at school. For "Risky Business: What Cognitive Factors Influence Risk Taking in the Academic Setting?" the risk of class cutting was modeled by an innovative simulation mimicking a prototypical classroom. Following the risk scenario, he measured his subjects' perceptions of the risks of skipping class. His project concluded that schools should increase the benefits of attending class, have clear enforcement of consequences, and minimize the perception that "everyone cuts class."

"Our second and third place winners showed enormous enthusiasm for using a sound scientific process to solve problems that they or their friends contend with," said Dr. Cindy Miner, NIDA's chief ISEF judge and deputy director of NIDA's Office of Science Policy and Communications. "These are important issues since we know that succeeding in school is crucial for future achievement, and is also a preventive factor for drug abuse and related health problems. We were thrilled that these brilliant young people already understand how science is key to solving these kinds of challenging social and health issues."

This year, more than 1,500 students from more than 50 countries participated in the ISEF competition, coordinated by the Society for Science and the Public, at the San Jose Convention Center. The nonprofit organization Society for Science and the Public partners with Intel - along with dozens of other corporate, academic, government and science-focused sponsors to provide support and awards for the Intel ISEF each year.

Winners of the Addiction Science Award received cash awards provided by Friends of NIDA in a ceremony Thursday night, with a $2,500 scholarship for the first-place honoree. NIDA has developed a special section on its website, which includes other resources on addiction science, to help science fair entrants understand the criteria for the awards: http://www.nida.nih.gov/sciencefair.

The Friends of NIDA is a coalition of individuals, scientific and professional societies, patient groups and other organizations committed to the elimination of drug abuse and addiction through education, advocacy, and the promotion of broad public and private support for NIDA's research agenda. For more information, visit: http://www.thefriendsofnida.org.

The non-profit organization, Friends of NIDA, partnered with the institute to sponsor the award as part of its ongoing support of NIDA research into the causes, consequences, and treatment of drug abuse and addiction.

"Once again we are delighted to be a part of this incredible scientific competition," said Dr. William Dewey, professor and interim chairman, Virginia Commonwealth University and founder and president of the Friends of NIDA. "This year's winners seem to have an extraordinary love of science and want to use that passion to help solve some of our world's most difficult problems. We support them wholeheartedly."

The National Institute on Drug Abuse, a component of the National Institutes of Health, U.S. Department of Health and Human Services, supports most of the world's research on the health aspects of drug abuse and addiction and educates policy makers, health professionals and the general public about advances achieved from the investments in biomedical and behavioral research related to drug addiction. NIDA Fact sheets on the health effects of drugs of abuse and information on NIDA research and other activities can be found on the NIDA home page at www.drugabuse.gov. To order publications in English or Spanish, call NIDA's new DrugPubs research dissemination center at 1-877-NIDA-NIH or 240-645-0228 (TDD) or fax or email requests to 240-645-0227 or drugpubs@nida.nih.gov.

The National Institutes of Health (NIH) - *The Nation's Medical Research Agency* - includes 27 Institutes and Centers and is a component of the U.S. Department of Health and Human Services. It is the primary Federal agency for conducting and supporting basic, clinical and translational medical research, and it investigates the causes, treatments, and cures for both common and rare diseases. For more information about NIH and its programs, visit www.nih.gov.

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